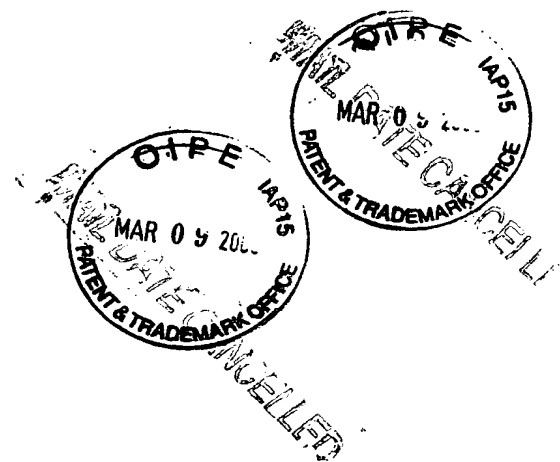SEQUENCE LISTING

<110> BARBAS, Carlos
       STEGE, Justin
       GUAN, Xueni
       DALMIA, Bipin

<120> METHODS AND COMPOSITIONS TO MODULATE
      EXPRESSION IN PLANTS

<130> 27801-20014.20

<140> 09/765,555
<141> 2001-01-19

<150> 09/620,897
<151> 2000-07-21

<150> US 60/177,468
<151> 2000-01-21

<160> 79

<170> FastSEQ for Windows Version 4.0

<210> 1
<211> 532
<212> DNA
<213> Artificial Sequence

<220>
<223> Promoter CsVMV

<400> 1
tctagaaact agcttccaga aggtaattat ccaagatgta gcatcaagaa tccaatgttt   60
acgggaaaaa ctatggaagt attatgtgag ctcagcaaga agcagatcaa tatgcggcac   120
atatgcaacc tatgttcaaa aatgaagaat gtacagatac aagatcctat actgccagaa   180
tacgaagaag aatacgtaga aattgaaaaa gaagaaccag gcgaagaaaa gaatcttgaa   240
gacgtaagca ctgacgacaa caatgaaaag aagaagataa ggtcggtgat tgtgaaagag   300
acatagagga cacatgtaag gtggaaaatg taagggcgga aagtaacctt atcacaaagg   360
aatcttatcc cccactactt atcctttat attttttccgt gtcatttttg cccttgagtt   420
ttcctatata aggaaccaag ttcggcattt gtgaaaacaa gaaaaaattt ggtgtaagct   480
attttctttg aagtactgag gatacaactt cagagaaatt tgtaagtttg ta   532

<210> 2
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Zinc finger protein 2C7 binding site

<400> 2
gcgtgggcgg cgtgggcg   18

<210> 3
<211> 51
<212> DNA
<213> Artificial Sequence

<220>
<223> Promoter pc7rbTATA

<400> 3

cccgggtata taataagctt ggcattccgg tactgttggt aaagccacca t   51

<210> 4
<211> 3121
<212> DNA
<213> Artificial Sequence

<220>
<223> pND3008 coding region

<400> 4
agcgtgaccc ggtcgtgccc ctctctagag ataatgagca ttgcatgtct aagttataaa   60
aaattaccac atattttttt tgtcacactt gtttgaagtg cagtttatct atctttatac   120
atatatttaa actttactct acgaataata taatctatag tactacaata atatcagtgt   180
tttagagaat catataaatg aacagttaga catggtctaa aggacaattg agtattttga   240
caacaggact ctacagtttt atcttttttag tgtgcatgtg ttctcctttt tttttgcaaa   300
tagcttcacc tatataatac ttcatccatt ttattagtac atccatttag ggtttagggt   360
taatggtttt tatagactaa tttttttagt acatctattt tattctattt tagcctctaa   420
attaagaaaa ctaaaactct attttagttt ttttatttaa taatttagat ataaaataga   480
ataaaataaa gtgactaaaa attaaacaaa tacccttttaa gaaattaaaa aaactaagga   540
aacatttttc ttgtttcgag tagataatgc cagcctgtta aacgccgtcg acgagtctaa   600
cggacaccaa ccagcgaacc agcagcgtcg cgtcgggcca agcgaagcag acggcacggc   660
atctctgtcg ctgcctctgg acccctctcg agagttccgc tccaccgttg gacttgctcc   720
gctgtcggca tccagaaatt gcgtggcgga gcggcagacg tgagccggca cggcaggcgg   780
cctcctcctc ctctcacggc acggcagcta cgggggattc ctttcccacc gctccttcgc   840
tttcccttcc tcgcccgccg taataaatag acaccccctc cacaccctct ttccccaacc   900
tcgtgttgtt cggagcgcac acacacacaa ccagatctcc cccaaatcca cccgtcggca   960
cctccgcttc aaggtacgcc gctcgtcctc cccccccccc cctctctacc ttctctagat   1020
cggcgttccg gtccatggtt agggcccggt agttctactt ctgttcatgt ttgtgttaga   1080
tccgtgtttg tgttagatcc gtgctgctag cgttcgtaca cggatgcgac ctgtacgtca   1140
gacacgttct gattgctaac ttgccagtgt ttctctttgg ggaatcctgg gatggctcta   1200
gccgttccgc agacgggatc gatttcatga ttttttttgt ttcgttgcat agggtttggt   1260
ttgccctttt cctttatttc aatatatgcc gtgcacttgt ttgtcgggtc atcttttcat   1320
gctttttttt gtcttggttg tgatgatgtg gtctggttgg cggtcgttc tagatcggag   1380
tagaattctg tttcaaacta cctggtggat ttattaattt tggatctgta tgtgtgtgcc   1440
atacatattc atagttacga attgaagatg atggatggaa atatcgatct aggataggta   1500
tacatgttga tgcgggtttt actgatgcat atacagagat gcttttttgtt cgcttggttg   1560
tgatgatgtg gtgtggttgg cggtcgttc attcgttcta gatcggagta gaatactgtt   1620
tcaaactacc tggtgtattt attaatttttg gaactgtatg tgtgtgtcat acatcttcat   1680
agttacgagt ttaagatgga tggaaatatc gatctaggat aggtatacat gttgatgtgg   1740
gttttactga tgcatataca tgatggcata tgcagcatct attcatatgc tctaaccttg   1800
agtacctatc tattataata aacaagtatg ttttataatt attttgatct tgatatactt   1860
ggatgatggc atatgcagca gctatatgtg gattttttta gccctgcctt catacgctat   1920
ttatttgctt ggtactgttt cttttgtcga tgctcaccct gttgtttggt gttacttctg   1980
caggtcgact ctagaggatc tatggcccag gcggccctcg agctccccta tgcttgccct   2040
gtcgagtcct gcgatcgccg cttttctaag tcggctgatc tgaagcgcca tatccgcatc   2100
cacacaggcc agaagccctt ccagtgtcga atatgcatgc gtaacttcag tcgtagtgac   2160
caccttacca cccacatccg cacccacaca ggcgagaagc cttttgcctg tgacatttgt   2220
gggaggaagt ttgccaggag tgatgaacgc aagaggcata ccaaaatcca taccggtgag   2280
aagccctatg cttgccctgt cgagtcctgc gatcgccgct tttctaagtc ggctgatctg   2340
aagcgccata tccgcatcca cacaggccag aagcccttcc agtgtcgaat atgcatgcgt   2400
aacttcagtc gtagtgacca ccttaccacc cacatccgca cccacacagg cgagaagcct   2460
tttgcctgtg acatttgtgg gaggaagttt gccaggagtg atgaacgcaa gaggcatacc   2520
aaaatccatt aagacagaa ggactctaga actagtggcc aggccggcca ggctagcccg   2580
aaaaagaaac gcaaagttgg cgcgccgac gcgctggacg atttcgatct cgacatgctg   2640
ggttctgatg ccctcgatga ctttgacctg gatatgttgg gaagcgacgc attggatgac   2700
tttgatctgg acatgctcgg ctccgatgct ctggacgatt cgatctcga tatgttaatt   2760
aactacccgt acgacgttcc ggactacgct tcttgagaat cgcggccgc gggcccgagc   2820
ctaggagga gctcaagatc ccccgaattt ccccgatcgt tcaaacattt ggcaataaag   2880
tttcttaaga ttgaatcctg ttgccggtct tgcgatgatt atcatctaat ttctgttgaa   2940
ttacgttaag catgtaataa ttaacatgta atgcatgacg ttatttatga gatgggtttt   3000
tatgattaga gtcccgcaat tatacattta atacgcgata gaaaacaaaa tatagcgcgc   3060
aaactaggat aaattatcgc gcgcggtgtc atctatgtta ctagatccgg gaattgggta   3120
c   3121

2

<210> 5
<211> 3069
<212> DNA
<213> Artificial Sequence

<220>
<223> pND3018 coding redion

<400> 5
```
agcgtgaccc ggtcgtgccc ctctctagag ataatgagca ttgcatgtct aagttataaa      60
aaattaccac atattttttt tgtcacactt gtttgaagtg cagtttatct atctttatac     120
atatatttaa actttactct acgaataata taatctatag tactacaata atatcagtgt     180
tttagagaat catataaatg aacagttaga catggtctaa aggacaattg agtattttga     240
caacaggact ctacagtttt atctttttag tgtgcatgtg ttctcctttt tttttgcaaa     300
tagcttcacc tatataatac ttcatccatt ttattagtac atccatttag ggtttagggt     360
taatggtttt tatagactaa tttttttagt acatctattt tattctattt tagcctctaa     420
attaagaaaa ctaaaactct attttagttt tttatttaa taatttagat ataaaataga     480
ataaaataaa gtgactaaaa attaaacaaa taccctttaa gaaattaaaa aaactaagga     540
aacattttc ttgtttcgag tagataatgc cagcctgtta aacgccgtcg acgagtctaa     600
cggacaccaa ccagcgaacc agcagcgtcg cgtcgggcca agcgaagcag acggcacggc     660
atctctgtcg ctgcctctgg acccctctcg agagttccgc tccaccgttg gacttgctcc     720
gctgtcggca tccagaaatt gcgtggcgga gcggcagacg tgagccggca cggcaggcgg     780
cctcctcctc ctctcacggc acggcagcta cgggggattc ctttcccacc gctccttcgc     840
tttcccttcc tcgcccgccg taataaatag acacccctc cacacctct ttccccaacc     900
tcgtgttgtt cggagcgcac acacacacaa ccagatctcc cccaaatcca cccgtcggca     960
cctccgcttc aaggtacgcc gctcgtcctc ccccccccc cctctctacc ttctctagat    1020
cggcgttccg gtccatggtt agggcccggt agttctactt ctgttcatgt ttgtgttaga    1080
tccgtgtttg tgttagatcc gtgctgctag cgttcgtaca cggatgcgac ctgtacgtca    1140
gacacgttct gattgctaac ttgccagtgt ttctctttgg ggaatcctgg gatggctcta    1200
gccgttccgc agacgggatc gatttcatga ttttttttgt ttcgttgcat agggtttggt    1260
ttgcccttt cctttatttc aatatatgcc gtgcacttgt ttgtcgggtc atcttttcat    1320
gctttttttt gtcttggttg tgatgatgtg gtctggttgg gcggtcgttc tagatcggag    1380
tagaattctg tttcaaacta cctggtggat ttattaattt tggatctgta tgtgtgtgcc    1440
atacatattc atagttacga attgaagatg atggatggaa atatcgatct aggataggta    1500
tacatgttga tgcgggtttt actgatgcat atacagagat gctttttgtt cgcttggttg    1560
tgatgatgtg gtgtggttgg gcggtcgttc attcgttcta gatcggagta gaatactgtt    1620
tcaaactacc tggtgtattt attaattttg gaactgtatg tgtgtgtcat acatcttcat    1680
agttacgagt ttaagatgga tggaaatatc gatctaggat aggtatacat gttgatgtgg    1740
gttttactga tgcatataca tgatggcata tgcagcatct attcatatgc tctaaccttg    1800
agtacctatc tattataata aacaagtatg ttttataatt attttgatct tgatatactt    1860
ggatgatggc atatgcagca gctatatgtg gatttttta gccctgcctt catacgctat    1920
ttatttgctt ggtactgttt cttttgtcga tgctcaccct gttgtttggt gttacttctg    1980
caggtcgact ctagaggatc cactagtgag ccatgggcta gcatggccgc tgccgtgcgc    2040
atgaacatcc agatgctgct cgaagccgct gattatctgg aacgccggga gcgcgaagcc    2100
gagcacggct acgccagcat gctgccatat ccgaaaaaga aacgcaaggt ggcccaggcg    2160
gccctcgagc tcccctatgc ttgccctgtc gagtcctgcg atcgccgctt ttctaagtcg    2220
gctgatctga agcgccatat ccgcatccac acaggccaga agcccttcca gtgtcgaata    2280
tgcatgcgta acttcagtcg tagtgaccac cttaccaccc catccgcac ccacacaggc    2340
gagaagcctt ttgcctgtga catttgtggg aggaagtttg ccaggagtga tgaacgcaag    2400
aggcatacca aaatccatac cggtgagaag ccctatgctt gccctgtcga gtcctgcgat    2460
cgccgctttt ctaagtcggc tgatctgaag cgccatatcc gcatccacac aggccagaag    2520
cccttccagt gtcgaatatg catgcgtaac ttcagtcgta gtgaccacct taccacccac    2580
atccgcaccc acacaggcga gaagcctttt gcctgtgaca tttgtgggag gaagtttgcc    2640
aggagtgatg aacgcaagag gcataccaaa atccatttaa gacagaagga ctctagaact    2700
agtggccagg ccggccagta cccgtacgac gttccggact acgcttcttg aaagcttggt    2760
accgagctcg gatcccccga atttccccga tcgttcaaac atttggcaat aaagtttctt    2820
aagattgaat cctgttgccg gtcttgcgat gattatcatc taatttctgt tgaattacgt    2880
taagcatgta ataattaaca tgtaatgcat gacgttattt atgagatggg ttttatgat    2940
tagagtcccg caattataca tttaatacgc gatagaaaac aaaatatagc gcgcaaacta    3000
ggataaatta tcgcgcgcgg tgtcatctat gttactagat ccgggaattc cggaccggta    3060
ccagcggcc                                                            3069
```

<210> 6

```
<211> 156
<212> DNA
<213> Artificial Sequence

<220>
<223> 6X2C7 binding site

<400> 6
cgtgctagcg cgtgggcggc gtgggcgaac aagcgtgggc ggcgtgggcg aacaagcgtg      60
ggcggcgtgg cgactagtg ctagcgcgtg ggcggcgtgg cgaacaagc gtgggcggcg      120
tgggcgaaca agcgtgggcg gcgtgggcga ctagtg                              156

<210> 7
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFPAp3

<400> 7
gatggagttg aagaagta                                                   18

<210> 8
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFP from -85 to -65

<400> 8
gcctccttcc tcctctcact c                                               21

<210> 9
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFPm1 from -68 to -85

<400> 9
tgagaggagg aaggaggc                                                   18

<210> 10
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFPm2 from -65 to -82

<400> 10
gagtgagagg aggaagga                                                   18

<210> 11
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFP from 294 to 317
```

4

<400> 11
gccaactact acggctccct cacc   24

<210> 12
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFPm3 from 311 to 294

<400> 12
ggagccgtag tagttggc   18

<210> 13
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> ZFPm4 from 317 to 300

<400> 13
ggtgagggag ccgtagta   18

<210> 14
<211> 3300
<212> DNA
<213> Artificial Sequence

<220>
<223> Partial sequence of pMal-m1 and zinc finger
       protein ZFPm1

<400> 14
```
ccgacaccat cgaatggtgc aaaacctttc gcggtatggc atgatagcgc ccggaagaga      60
gtcaattcag ggtggtgaat gtgaaaccag taacgttata cgatgtcgca gagtatgccg     120
gtgtctctta tcagaccgtt ccccgcgtgg tgaaccaggc cagccacgtt ctgcgaaaa      180
cgcgggaaaa agtggaagcg gcgatggcgg agctgaatta cattcccaac cgcgtggcac     240
aacaactggc gggcaaacag tcgttgctga ttggcgttgc cacctccagt ctggccctgc     300
acgcgccgtc gcaaattgtc gcggcgatta aatctcgcgc cgatcaactg ggtgccagcg     360
tggtggtgtc gatggtagaa cgaagcggcg tcgaagcctg taaagcggcg gtgcacaatc     420
ttctcgcgca acgcgtcagt gggctgatca ttaactatcc gctggatgac caggatgcca     480
ttgctgtgga agctgcctgc actaatgttc cggcgttatt tcttgatgtc tctgaccaga     540
cacccatcaa cagtattatt ttctcccatg aagacggtac gcgactgggc gtggagcatc     600
tggtcgcatt gggtcaccag caaatcgcgc tgttagcggg cccattaagt tctgtctcgg     660
cgcgtctgcg tctggctggc tggcataaat atctcactcg caatcaaatt cagccgatag     720
cggaacggga aggcgactgg agtgccatgt ccggttttca acaaaccatg caaatgctga     780
atgagggcat cgttcccact gcgatgctgg ttgccaacga tcagatggcg ctgggcgcaa     840
tgcgcgccat taccgagtcc gggctgcgcg ttggtgcgga tatctcggta gtgggatacg     900
acgataccga agacagctca tgttatatcc cgccgttaac caccatcaaa caggattttc     960
gcctgctggg gcaaaccagc gtggaccgct tgctgcaact ctctcagggc caggcggtga    1020
agggcaatca gctgttgccc gtctcactgg tgaaaagaaa aaccaccctg gcgcccaata    1080
cgcaaaccgc ctctccccgc gcgttggccg attcattaat gcagctggca cgacaggttt    1140
cccgactgga aagcgggcag tgagcgcaac gcaattaatg tgagttagct cactcattag    1200
gcacaattct catgtttgac agcttatcat cgactgcacg gtgcaccaat gcttctggcg    1260
tcaggcagcc atcggaagct gtggtatggc tgtgcaggtc gtaaatcact gcataattcg    1320
tgtcgctcaa ggcgcactcc cgttctggat aatgtttttt gcgccgacat cataacggtt    1380
ctggcaaata ttctgaaatg agctgttgac aattaatcat cggctcgtat aatgtgtgga    1440
attgtgagcg gataacaatt cacacaggaa acagccagt ccgtttaggt gttttcacga    1500
gcacttcacc aacaaggacc atagattatg aaaactgaag aaggtaaact ggtaatctgg    1560
attaacggcg ataaaggcta aacggtctc gctgaagtcg gtaagaaatt cgagaaagat    1620
accggaatta aagtcaccgt tgagcatccg gataaactgg aagagaaatt cccacaggtt    1680
gcggcaactg gcgatggccc tgacattatc ttctgggcac acgaccgctt tggtggctac    1740
```

```
gctcaatctg gcctgttggc tgaaatcacc ccggacaaag cgttccagga caagctgtat      1800
ccgtttacct gggatgccgt acgttacaac ggcaagctga ttgcttaccc gatcgctgtt      1860
gaagcgttat cgctgattta taacaaagat ctgctgccga acccgccaaa aacctgggaa      1920
gagatcccgg cgctggataa agaactgaaa gcgaaaggta agagcgcgct gatgttcaac      1980
ctgcaagaac cgtacttcac ctggccgctg attgctgctg acggggggtta tgcgttcaag      2040
tatgaaaacg gcaagtacga cattaaagac gtgggcgtgg ataacgctgg cgcgaaagcg      2100
ggtctgacct tcctggttga cctgattaaa aacaaacaca tgaatgcaga caccgattac      2160
tccatcgcag aagctgcctt taataaaggc gaaacagcga tgaccatcaa cggccgtgg       2220
gcatggtcca acatcgacac cagcaaagtg aattatggtg taacggtact gccgaccttc      2280
aagggtcaac catccaaacc gttcgttggc gtgctgagcg caggtattaa cgccgccagt      2340
ccgaacaaag agctggcaaa agagttcctc gaaaactatc tgctgactga tgaaggtctg      2400
gaagcggtta ataaagacaa accgctgggt gccgtagcgc tgaagtctta cgaggaagag      2460
ttggcgaaag atccacgtat tgccgccacc atggaaaacg cccagaaagg tgaaatcatg      2520
ccgaacatcc cgcagatgtc cgctttctgg tatgccgtgc gtactgcggt gatcaacgcc      2580
gccagcggtc gtcagactgt cgatgaagcc ctgaaagacg cgcagactaa ttcgagctcg      2640
aacaacaaca acaataacaa taacaacaac ctcgggatcg agggaaggat ttcagaattc      2700
ggatcctctt cctctgtggc ccaggcggcc ctcgagcccg gggagaagcc ctatgcttgt      2760
ccggaatgtg gtaagtcctt ctctcagagc tctcacctgg tgcgccacca gcgtacccac      2820
acgggtgaaa aaccgtataa atgcccagag tgcggcaaat ctttagcca gtccagcaac      2880
ctggtgcgcc atcaacgcac tcatactggc gagaagccat acaaatgtcc agaatgtggc      2940
aagtctttct ctcggtctga caatctcgtc cggcaccaac gtactcacac cggggagaag      3000
ccctatgctt gtccggaatg tggtaagtcc ttcagccgca gcgataacct ggtgcgccac      3060
cagcgtaccc acacgggtga aaaaccgtat aaatgcccag agtgcggcaa atctttttagc      3120
caggccggcc acctggccag ccatcaacgc actcatactg gcgagaagcc atacaaatgt      3180
ccagaatgtg gcaagtcttt ctctcggtct gacaatctcg tccggcacca acgtactcac      3240
accggtaaaa aaactagtgg ccaggccggc cagtacccgt acgacgttcc ggactacgct      3300
```

```
ccgacaccat cgaatggtgc aaaacctttc gcggtatggc atgatagcgc ccggaagaga       60
gtcaattcag ggtggtgaat gtgaaaccag taacgttata cgatgtcgca gagtatgccg      120
gtgtctctta tcagaccgtt tcccgcgtgg tgaaccaggc cagccacgtt tctgcgaaaa      180
cgcgggaaaa agtggaagcg gcgatggcgg agctgaatta cattcccaac cgcgtggcac      240
aacaactggc gggcaaacag tcgttgctga ttggcgttgc cacctccagt ctggccctgc      300
acgcgccgtc gcaaattgtc gcggcgatta atctcgcgc cgatcaactg ggtgccagcg      360
tggtggtgtc gatggtagaa cgaagcggcg tcgaagcctg taaagcggcg gtgcacaatc      420
ttctcgcgca acgcgtcagt gggctgatca ttaactatcc gctggatgac caggatgcca      480
ttgctgtgga agctgcctgc actaatgttc cggcgttatt tcttgatgtc tctgaccaga      540
cacccatcaa cagtattatt ttctcccatg aagacggtac gcgactgggc gtggagcatc      600
tggtcgcatt gggtcaccag caaatcgcgc tgttagcggg cccattaagt tctgtctcgg      660
cgcgtctgcg tctggctggc tggcataaat atctcactcg caatcaaatt cagccgatag      720
cggaacggga aggcgactgg agtgccatgt ccggttttca acaaaccatg caaatgctga      780
atgagggcat cgttcccact gcgatgctgg ttgccaacga tcagatggcg ctgggcgcaa      840
tgcgcgccat taccgagtcc gggctgcgcg ttggtgcgga tatctcggta gtgggatacg      900
acgataccga agacagctca tgttatatcc cgccgttaac caccatcaaa caggattttc      960
gcctgctggg gcaaaccagc gtggaccgct tgctgcaact ctctcagggc caggcggtga     1020
agggcaatca gctgttgccc gtctcactgg tgaaaagaaa aaccaccctg gcgcccaata     1080
cgcaaaccgc ctctccccgc gcgttggccg attcattaat gcagctggca cgacaggttt     1140
cccgactgga aagcgggcag tgagcgcaac gcaattaatg tgagttagct cactcattag     1200
gcacaattct catgtttgac agcttatcat cgactgcacg gtgcaccaat gcttctggcg     1260
tcaggcagcc atcggaagct gtggtatggc tgtgcaggtc gtaaatcact gcataattcg     1320
tgtcgctcaa ggcgcactcc cgttctggat aatgtttttt gcgccgacat cataacggtt     1380
ctggcaaata ttctgaaatg agctgttgac aattaatcat cggctcgtat aatgtgtgga     1440
attgtgagcg gataacaatt tcacacagga aacagccagt ccgtttaggt gttttcacga     1500
gcacttcacc aacaaggacc atagattatg aaaactgaag aaggtaaact ggtaatctgg     1560
attaacggcg ataaaggcta taacggtctc gctgaagtcg gtaagaaatt cgagaaagat     1620
```

6

```
accggaatta aagtcaccgt tgagcatccg gataaactgg aagagaaatt cccacaggtt      1680
gcggcaactg gcgatggccc tgacattatc ttctgggcac acgaccgctt tggtggctac      1740
gctcaatctg gcctgttggc tgaaatcacc ccggacaaag cgttccagga caagctgtat      1800
ccgtttacct gggatgccgt acgttacaac ggcaagctga ttgcttaccc gatcgctgtt      1860
gaagcgttat cgctgattta taacaaagat ctgctgccga acccgccaaa aacctgggaa      1920
gagatcccgg cgctggataa agaactgaaa gcgaaaggta gagcgcgct  gatgttcaac      1980
ctgcaagaac cgtacttcac ctggccgctg attgctgctg acgggggtta tgcgttcaag      2040
tatgaaaacg gcaagtacga cattaaagac gtgggcgtgg ataacgctgg cgcgaaagcg      2100
ggtctgacct tcctggttga cctgattaaa aacaaacaca tgaatgcaga caccgattac      2160
tccatcgcag aagctgcctt taataaaggc gaaacagcga tgaccatcaa cggcccgtgg      2220
gcatggtcca acatcgacac cagcaaagtg aattatggtg taacggtact gccgaccttc      2280
aagggtcaac catccaaacc gttcgttggc gtgctgagcg caggtattaa cgccgccagt      2340
ccgaacaaag agctggcaaa agagttcctc gaaaactatc tgctgactga tgaaggtctg      2400
gaagcggtta ataaagacaa accgctgggt gccgtagcgc tgaagtctta cgaggaagag      2460
ttggcgaaag atccacgtat tgccgccacc atggaaaacg cccagaaagg tgaaatcatg      2520
ccgaacatcc cgcagatgtc cgctttctgg tatgccgtgc gtactgcggt gatcaacgcc      2580
gccagcggtc gtcagactgt cgatgaagcc ctgaaagacg cgcagactaa ttcgagctcg      2640
aacaacaaca acaataacaa taacaacaac ctcgggatcg agggaaggat ttcagaattc      2700
ggatcctctt cctctgtggc ccaggcggcc ctcgagcccg gggagaagcc ctatgcttgt      2760
ccggaatgtg gtaagtcctt ctctcagagc tctcacctgg tgcgccacca gcgtacccac      2820
acgggtgaaa aaccgtataa atgcccagag tgcggcaaat cttttagcca gtccagcaac      2880
ctggtgcgcc atcaacgcac tcatactggc gagaagccat acaaatgtcc agaatgtggc      2940
aagtctttct ctcggtctga caatctcgtc cggcaccaac gtactcacac cggggagaag      3000
ccctatgctt gtccggaatg tggtaagtcc ttcagccgca gcgataacct ggtgcgccac      3060
cagcgtaccc acacgggtga aaaaccgtat aaatgcccag agtgcggcaa atcttttagc      3120
caggccggcc acctggccag ccatcaacgc actcatactg gcgagaagcc atacaaatgt      3180
ccagaatgtg gcaagtcttt ctctcggtct gacaatctcg tccggcacca acgtactcac      3240
accggtaaaa aaactagtgg ccaggccggc cagtacccgt acgacgttcc ggactacgct      3300
```

<210> 16
<211> 3300
<212> DNA
<213> Artificial Sequence

<220>
<223> PArtial sequence of pMal-m3 and zinc finger
      protein ZFPm3

<400> 16
```
ccgacaccat cgaatggtgc aaaacctttc gcggtatggc atgatagcgc ccggaagaga       60
gtcaattcag ggtggtgaat gtgaaaccag taacgttata cgatgtcgca gagtatgccg      120
gtgtctctta tcagaccgtt tcccgcgtgg tgaaccaggc cagccacgtt tctgcgaaaa      180
cgcgggaaaa agtggaagcg gcgatggcgg agctgaatta cattcccaac cgcgtggcac      240
aacaactggc gggcaaacag tcgttgctga ttggcgttgc cacctccagt ctggccctgc      300
acgcgccgtc gcaaattgtc gcggcgatta atctcgcgc  cgatcaactg ggtgccagcg      360
tggtggtgtc gatggtagaa cgaagcggcg tcgaagcctg taaagcggcg gtgcacaatc      420
ttctcgcgca acgcgtcagt gggctgatca ttaactatcc gctggatgac caggatgcca      480
ttgctgtgga agctgcctgc actaatgttc cggcgttatt tcttgatgtc tctgaccaga      540
cacccatcaa cagtattatt ttctcccatg aagacggtac gcgactgggc gtggagcatc      600
tggtcgcatt gggtcaccag caaatcgcgc tgttagcggg cccattaagt tctgtctcgg      660
cgcgtctgcg tctggctggc tggcataaat atctcactcg caatcaaatt cagccgatag      720
cggaacggga aggcgactgg agtgccatgt ccggtttttca acaaaccatg caaatgctga      780
atgagggcat cgttcccact gcgatgctgg ttgccaacga tcagatggcg ctgggcgcaa      840
tgcgcgccat taccgagtcc gggctgcgcg ttggtgcgga tatctcggta gtgggatacg      900
acgataccga agacagctca tgttatatcc cgccgttaac caccatcaaa caggattttc      960
gcctgctggg gcaaaccagc gtggaccgct tgctgcaact ctctcagggc caggcggtga     1020
agggcaatca gctgttgccc gtctcactgg tgaaaagaaa aaccaccctg gcgcccaata     1080
cgcaaaccgc ctctccccgc gcgttggccg attcattaat gcagctggca cgacaggttt     1140
cccgactgga aagcgggcag tgagcgcaac gcaattaatg tgagttagct cactcattag     1200
gcacaattct catgtttgac agcttatcat cgactgcacg gtgcaccaat gcttctggcg     1260
tcaggcagcc atcggaagct gtggtatggc tgtgcaggtc gtaaatcact gcataattcg     1320
tgtcgctcaa ggcgcactcc cgttctggat aatgtttttt gcgccgacat cataacggtt     1380
ctggcaaata ttctgaaatg agctgttgac aattaatcat cggctcgtat aatgtgtgga     1440
attgtgagcg gataacaatt tcacacagga aacagccagt ccgtttaggt gttttcacga     1500
```

7

```
gcacttcacc aacaaggacc atagattatg aaaactgaag aaggtaaact ggtaatctgg      1560
attaacggcg ataaaggcta taacggtctc gctgaagtcg gtaagaaatt cgagaaagat      1620
accggaatta aagtcaccgt tgagcatccg gataaactgg aagagaaatt cccacaggtt      1680
gcggcaactg gcgatggccc tgacattatc ttctgggcac acgaccgctt tggtggctac      1740
gctcaatctg gcctgttggc tgaaatcacc ccggacaaag cgttccagga caagctgtat      1800
ccgtttacct gggatgccgt acgttacaac ggcaagctga ttgcttaccc gatcgctgtt      1860
gaagcgttat cgctgattta taacaaagat ctgctgccga acccgccaaa aacctgggaa      1920
gagatcccgg cgctggataa agaactgaaa gcgaaaggta agagcgcgct gatgttcaac      1980
ctgcaagaac cgtacttcac ctggccgctg attgctgctg acggggggtta tgcgttcaag      2040
tatgaaaacg gcaagtacga cattaaagac gtgggcgtgg ataacgctgg cgcgaaagcg      2100
ggtctgacct tcctggttga cctgattaaa aacaaacaca tgaatgcaga caccgattac      2160
tccatcgcag aagctgcctt taataaaggc gaaacagcga tgaccatcaa cggcccgtgg      2220
gcatggtcca acatcgacac cagcaaagtg aattatggtg taacggtact gccgaccttc      2280
aagggtcaac atccaaacc gttcgttggc gtgctgagcg caggtattaa cgccgccagt      2340
ccgaacaaag agctggcaaa agagttcctc gaaaactatc tgctgactga tgaaggtctg      2400
gaagcggtta ataaagacaa accgctgggt gccgtagcgc tgaagtctta cgaggaagag      2460
ttggcgaaag atccacgtat tgccgccacc atggaaaacg cccagaaagg tgaaatcatg      2520
ccgaacatcc cgcagatgtc cgctttctgg tatgccgtgc gtactgcggt gatcaacgcc      2580
gccagcggtc gtcagactgt cgatgaagcc ctgaaagacg cgcagactaa ttcgagctcg      2640
aacaacaaca acaataacaa taacaacaac ctcgggatcg agggaaggat ttcagaattc      2700
ggatcctctt cctctgtggc ccaggcggcc ctcgagcccg gggagaagcc ctatgcttgt      2760
ccggaatgtg gtaagtcctt cagcgatcct ggccacctgg ttcgccacca gcgtacccac      2820
acgggtgaaa aaccgtataa atgcccagag tgcggcaaat cttttagcac cagcggctcc      2880
ctggtgcgcc atcaacgcac tcatactggc gagaagccat acaaatgtcc agaatgtggc      2940
aagtctttca gccagagctc cagcctggtg cgccaccaac gtactcacac cggggagaag      3000
ccctatgctt gtccggaatg tggtaagtcc ttcagccaga gcagctccct ggtgcgccac      3060
cagcgtaccc acacgggtga aaaaccgtat aaatgcccag agtgcggcaa atcttttagt      3120
gactgccgcg accttgctcg ccatcaacgc actcatactg gcgagaagcc atacaaatgt      3180
ccagaatgtg gcaagtcttt ctcccaatcc agccatctcg tccggcacca acgtactcac      3240
accggtaaaa aaactagtgg ccaggccggc cagtacccgt acgacgttcc ggactacgct      3300
```

<210> 17
<211> 3300
<212> DNA
<213> Artificial Sequence

<220>
<223> Partial sequence of pMal-m4 and zinc finger
      protein ZFPm4

<400> 17
```
ccgacaccat cgaatggtgc aaaacctttc gcggtatggc atgatagcgc ccggaagaga       60
gtcaattcag ggtggtgaat gtgaaaccag taacgttata cgatgtcgca gagtatgccg      120
gtgtctctta tcagaccgtt tcccgcgtgg tgaaccaggc cagccacgtt tctgcgaaaa      180
cgcgggaaaa agtggaagcg gcgatggcgg agctgaatta cattcccaac cgcgtggcac      240
aacaactggc gggcaaacag tcgttgctga ttggcgttgc cacctccagt ctggccctgc      300
acgcgccgtc gcaaattgtc gcggcgatta atctcgcgc cgatcaactg ggtgccagcg      360
tggtggtgtc gatggtagaa cgaagcggcg tcgaagcctg taaagcggcg gtgcacaatc      420
ttctcgcgca acgcgtcagt gggctgatca ttaactatcc gctggatgac aggatgcca      480
ttgctgtgga agctgcctgc actaatgttc cggcgttatt tcttgatgtc tctgaccaga      540
cacccatcaa cagtattatt ttctcccatg aagacggtac gcgactgggc gtggagcatc      600
tggtcgcatt gggtcaccag caaatcgcgc tgttagcggg cccattaagt tctgtctcgg      660
cgcgtctgcg tctggctggc tggcataaat atctcactcg caatcaaatt cagccgatag      720
cggaacggga aggcgactgg agtgccatgt ccggttttca aaaaccatg caaatgctga      780
atgagggcat cgttcccact gcgatgctgg ttgccaacga tcagatggcg ctgggcgcaa      840
tgcgcgccat taccgagtcc gggctgcgcg ttggtgcgga tatctcggta gtgggatacg      900
acgataccga agacagctca tgttatatcc cgccgttaac caccatcaaa caggattttc      960
gcctgctggg gcaaaccagc gtggaccgct tgctgcaact ctctcagggc caggcggtga     1020
agggcaatca gctgttgccc gtctcactgg tgaaagaaa aaccaccctg gcgcccaata     1080
cgcaaaccgc ctctccccgc gcgttggccg attcattaat gcagctggca cgacaggttt     1140
cccgactgga aagcgggcag tgagcgcaac gcaattaatg tgagttagct cactcattag     1200
gcacaattct catgtttgac agcttatcat cgactgcacg gtgcaccaat gcttctggcg     1260
tcaggcagcc atcggaagct gtggtatggc tgtgcaggtc gtaaatcact gcataattcg     1320
tgtcgctcaa ggcgcactcc cgttctggat aatgtttttt gcgccgacat cataacggtt     1380
```

8

```
ctggcaaata ttctgaaatg agctgttgac aattaatcat cggctcgtat aatgtgtgga    1440
attgtgagcg ataacaatt tcacacagga aacagccagt ccgtttaggt gttttcacga    1500
gcacttcacc aacaaggacc atagattatg aaaactgaag aaggtaaact ggtaatctgg    1560
attaacggcg ataaaggcta taacggtctc gctgaagtcg gtaagaaatt cgagaaagat    1620
accggaatta aagtcaccgt tgagcatccg gataaactgg aagagaaatt cccacaggtt    1680
gcggcaactg gcgatggccc tgacattatc ttctgggcac acgaccgctt tggtggctac    1740
gctcaatctg gcctgttggc tgaaatcacc ccggacaaag cgttccagga caagctgtat    1800
ccgtttacct gggatgccgt acgttacaac ggcaagctga ttgcttaccc gatcgctgtt    1860
gaagcgttat cgctgattta taacaaagat ctgctgccga acccgccaaa aacctgggaa    1920
gagatcccgg cgctggataa agaactgaaa gcgaaaggta gagcgcgct gatgttcaac    1980
ctgcaagaac cgtacttcac ctggccgctg attgctgctg acgggggtta tgcgttcaag    2040
tatgaaaacg gcaagtacga cattaaagac gtgggcgtgg ataacgctgg cgcgaaagcg    2100
ggtctgacct tcctggttga cctgattaaa aacaaacaca tgaatgcaga caccgattac    2160
tccatcgcag aagctgcctt taataaaggc gaaacagcga tgaccatcaa cggcccgtgg    2220
gcatggtcca acatcgacac cagcaaagtg aattatggtg taacggtact gccgaccttc    2280
aagggtcaac catccaaacc gttcgttggc gtgctgagcg caggtattaa cgccgccagt    2340
ccgaacaaag agctggcaaa agagttcctc gaaaactatc tgctgactga tgaaggtctg    2400
gaagcggtta ataaagacaa accgctgggt gccgtagcgc tgaagtctta cgaggaagag    2460
ttggcgaaag atccacgtat tgccgccacc atggaaaacg cccagaaagg tgaaatcatg    2520
ccgaacatcc gcagatgtc cgctttctgg tatgccgtgc gtactgcggt gatcaacgcc    2580
gccagcggtc gtcagactgt cgatgaagcc ctgaaagacg cgcagactaa ttcgagctcg    2640
aacaacaaca caataacaa taacaacaac ctcgggatcg agggaaggat ttcagaattc    2700
ggatcctctt cctctgtggc ccaggcggcc ctcgagcccg gggagaagcc ctatgcttgt    2760
ccggaatgtg gtaagtcctt cagccagagc agctccctgg tgcgccacca gcgtacccac    2820
acgggtgaaa aaccgtataa atgcccagag tgcggcaaat cttttagcca gagcagcagc    2880
ctggtgcgcc atcaacgcac tcatactggc gagaagccat acaaatgtcc agaatgtggc    2940
aagtctttca gtgattgtcg tgatcttgcg aggcaccaac gtactcacac cggggagaag    3000
ccctatgctt gtccggaatg tggtaagtcc ttctctcaga gctctcacct ggtgcgccac    3060
cagcgtaccc acacgggtga aaaaccgtat aaatgcccag agtgcggcaa atcttttagc    3120
cgcagcgata acctggtgcg ccatcaacgc actcatactg gcgagaagcc atacaaatgt    3180
ccagaatgtg gcaagtcttt ctcaacttca ggccatttgg tccgtcacca acgtactcac    3240
accggtaaaa aaactagtgg ccaggccggc cagtacccgt acgacgttcc ggactacgct    3300
```

<210> 18
<211> 3300
<212> DNA
<213> Artificial Sequence

<220>
<223> Parial sequence of pMal-Ap3 and zinc finger
      protein ZFPAp3

<400> 18
```
ccgacaccat cgaatggtgc aaaacctttc gcggtatggc atgatagcgc ccggaagaga     60
gtcaattcag ggtggtgaat gtgaaaccag taacgttata cgatgtcgca gagtatgccg    120
gtgtctctta tcagaccgtt tcccgcgtgg tgaaccaggc cagccacgtt tctgcgaaaa    180
cgcgggaaaa agtggaagcg gcgatggcgg agctgaatta cattcccaac cgcgtggcac    240
aacaactggc gggcaaacag tcgttgctga ttggcgttgc cacctccagt ctggccctgc    300
acgcgccgtc gcaaattgtc gcggcgatta atctcgcgc cgatcaactg ggtgccagcg    360
tggtggtgtc gatggtagaa cgaagcggcg tcgaagcctg taaagcggcg gtgcacaatc    420
ttctcgcgca acgcgtcagt gggctgatca ttaactatcc gctggatgac caggatgcca    480
ttgctgtgga agctgcctgc actaatgttc cggcgttatt tcttgatgtc tctgaccaga    540
cacccatcaa cagtattatt ttctcccatg aagacggtac gcgactgggc gtggagcatc    600
tggtcgcatt gggtcaccag caaatcgcgc tgttagcggg cccattaagt tctgtctcgg    660
cgcgtctgcg tctggctggc tggcataaat atctcactcg caatcaaatt cagccgatag    720
cggaacggga aggcgactgg agtgccatgt ccggttttca caaaccatg caaatgctga    780
atgagggcat cgttcccact gcgatgctgg ttgccaacga tcagatggcg ctgggcgcaa    840
tgcgcgccat taccgagtcc gggctgcgcg ttggtgcgga tatctcggta gtgggatacg    900
acgataccga agacagctca tgttatatcc gccgttaac caccatcaaa caggattttc    960
gcctgctggg gcaaaccagc gtggaccgct tgctgcaact ctctcagggc caggcggtga   1020
agggcaatca gctgttgccc gtctcactgg tgaaagaaa aaccaccctg gcgcccaata   1080
cgcaaaccgc ctctccccgc gcgttggccg attcattaat gcagctggca cgacaggttt   1140
cccgactgga aagcgggcag tgagcgcaac gcaattaatg tgagttagct cactcattag   1200
gcacaattct catgtttgac agcttatcat cgactgcacg gtgcaccaat gcttctggcg   1260
```

9

```
tcaggcagcc atcggaagct gtggtatggc tgtgcaggtc gtaaatcact gcataattcg      1320
tgtcgctcaa ggcgcactcc cgttctggat aatgtttttt gcgccgacat cataacggtt      1380
ctggcaaata ttctgaaatg agctgttgac aattaatcat cggctcgtat aatgtgtgga      1440
attgtgagcg gataacaatt tcacacagga aacagccagt ccgtttaggt gttttcacga      1500
gcacttcacc aacaaggacc atagattatg aaaactgaag aaggtaaact ggtaatctgg      1560
attaacggcg ataaaggcta taacggtctc gctgaagtcg gtaagaaatt cgagaaagat      1620
accggaatta aagtcaccgt tgagcatccg gataaactgg aagagaaatt cccacaggtt      1680
gcggcaactg gcgatggccc tgacattatc ttctgggcac acgaccgctt ggtggctac       1740
gctcaatctg gcctgttggc tgaaatcacc ccggacaaag cgttccagga caagctgtat      1800
ccgtttacct gggatgccgt acgttacaac ggcaagctga ttgcttaccc gatcgctgtt      1860
gaagcgttat cgctgattta taacaaagat ctgctgccga acccgccaaa aacctgggaa      1920
gagatcccgg cgctggataa agaactgaaa gcgaaaggta agagcgcgct gatgttcaac      1980
ctgcaagaac cgtacttcac ctggccgctg attgctgctg acggggggtta tgcgttcaag      2040
tatgaaaacg gcaagtacga cattaaagac gtgggcgtgg ataacgctgg cgcgaaagcg      2100
ggtctgacct tcctggttga cctgattaaa aacaaacaca tgaatgcaga caccgattac      2160
tccatcgcag aagctgcctt taataaaggc gaaacagcga tgaccatcaa cggcccgtgg      2220
gcatggtcca acatcgacac cagcaaagtg aattatggtg taacggtact gccgaccttc      2280
aagggtcaac catccaaacc gttcgttggc gtgctgagcg caggtattaa cgccgccagt      2340
ccgaacaaag agctggcaaa agagttcctc gaaaactatc tgctgactga tgaaggtctg      2400
gaagcggtta taaagacaa accgctgggt gccgtagcgc tgaagtctta cgaggaagag       2460
ttggcgaaag atccacgtat tgccgccacc atggaaaacg cccagaaagg tgaaatcatg      2520
ccgaacatcc cgcagatgtc cgctttctgg tatgccgtgc gtactgcggt gatcaacgcc      2580
gccagcggtc gtcagactgt cgatgaagcc ctgaaagacg cgcagactaa ttcgagctcg      2640
aacaacaaca caataacaa taacaacaac ctcgggatcg agggaaggat ttcagaattc       2700
ggatcctctt cctctgtggc ccaggcggcc ctcgagcccg gggagaagcc ctatgcttgt      2760
ccggaatgtg gtaagtcctt cagccagagc agctccctgg tgcgccacca gcgtacccac      2820
acgggtgaaa aaccgtataa atgcccagag tgcggcaaat cttttagcca gtccagcaac      2880
ctggtgcgcc atcaacgcac tcatactggc gagaagccat acaaatgtcc agaatgtggc      2940
aagtctttca gccagtccag caacctggtg cgccaccaac gtactcacac cggggagaag      3000
ccctatgctt gtccggaatg tggtaagtcc ttcagcacca gtggctcctt ggttagacac      3060
cagcgtaccc acacgggtga aaaaccgtat aaatgcccag agtgcggcaa atctttttagc      3120
cagcgcgccc acctggaacg ccatcaacgc actcatactg gcgagaagcc atacaaatgt      3180
ccagaatgtg gcaagtcttt ctcaacttca ggcaacttgg tccgtcacca acgtactcac      3240
accggtaaaa aaactagtgg ccaggccggc cagtacccgt acgacgttcc ggactacgct      3300
```

<210> 19
<211> 58
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo m12

<400> 19
```
ggagcctcct tcctcctctc actcgggttt tcccgagtga gaggaggaag gaggctcc        58
```

<210> 20
<211> 64
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo m34

<400> 20
```
ggagccaact actacggctc cctcaccggg ttttcccggt gagggagccg tagtagttgg      60
ctcc                                                                   64
```

<210> 21
<211> 52
<212> DNA
<213> Artificial Sequence

<220>

10

<223> Oligo Ap3

<400> 21
ggttacttct tcaactccat cgggttttcc cgatggagtt gaagaagtaa cc   52

<210> 22
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo NRI-1

<400> 22
ggttctaccc ctcccaccgc gggttttccc gcggtgggag gggtagaacc   50

<210> 23
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo NRI-2

<400> 23
ggtgcggcga ctgcagcagc gggttttccc gctgctgcag tcgccgcacc   50

<210> 24
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo hHD-I

<400> 24
ggggccccgc ctccgccggc gggttttccc gccggcggag gcggggcccc   50

<210> 25
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo hHD-II

<400> 25
ggggcagccc ccacggcgcc gggttttccc ggcgccgtgg gggctgcccc   50

<210> 26
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo c5p1-g

<400> 26
gggacacccc caaccccgcc gggttttccc ggcggggttg ggggtgtccc   50

<210> 27
<211> 50
<212> DNA
<213> Artificial Sequence

11

<220>
<223> Oligo c5p3-g

<400> 27
ggctctgctc atcccactac gggttttccc gtagtgggat gagcagagcc   50

<210> 28
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo B3c2

<400> 28
ggacccaccg cgtcccctcc gggttttccc ggaggggacg cggtgggtcc   50

<210> 29
<211> 50
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligo e2c-g

<400> 29
ggcactgcgg ctccggcccc gggttttccc ggggccggag ccgcagtgcc   50

<210> 30
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer Ap3-F

<400> 30
ggcgagaggg aagatccag   19

<210> 31
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer NZlib5'

<400> 31
ggcccaggcg gccctcgagc   20

<210> 32
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer Ap3f4-R

<400> 32
ctcctctaat acgactcact atagggacac tcacctagcc tctg   44

<210> 33
<211> 21

12

```
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer m4f3

<400> 33
cctcgcaaga tcacgacaat c                                          21

<210> 34
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR probe for AP3

<400> 34
ccatttcatc ctcaagacga cgcagct                                    27

<210> 35
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer for AP3 (forward)

<400> 35
tttggacgag cttgacattc ag                                         22

<210> 36
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> PCR primer for AP3 (reverse)

<400> 36
cgcgaacgag tttgaaagtg                                            20

<210> 37
<211> 44
<212> DNA
<213> Artificial Sequence

<220>
<223> Oligonucleotide

<400> 37
ctcctctaat acgactcact atagggacac tcacctagcc tctg                 44

<210> 38
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFPm1

<400> 38
Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
  1               5                  10                  15
```

```
Cys Gly Lys Ser Phe Ser Asp Pro Gly His Leu Val Arg His Gln Arg
            20                  25                  30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
            35                  40                  45
Phe Ser Gln Arg Ala His Leu Glu Arg His Gln Arg Thr His Thr Gly
            50                  55                  60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65                  70                  75                  80
Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
                85                  90                  95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
            100                 105                 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
            115                 120                 125
Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg
            130             135                 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145             150                 155                 160
Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg Thr His Thr Gly
                165             170                 175
Lys Lys Thr Ser Gly Gln Ala Gly
            180
```

```
<210> 39
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFPm2

<400> 39
Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
 1               5                  10                  15
Cys Gly Lys Ser Phe Ser Gln Ser Ser His Leu Val Arg His Gln Arg
            20                  25                  30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
            35                  40                  45
Phe Ser Gln Ser Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly
            50                  55                  60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser
65                  70                  75                  80
Asp Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
                85                  90                  95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
            100                 105                 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
            115                 120                 125
Cys Gly Lys Ser Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg
            130             135                 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145             150                 155                 160
Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg Thr His Thr Gly
                165             170                 175
Lys Lys Thr Ser Gly Gln Ala Gly
            180
```

```
<210> 40
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFPm3
```

<400> 40

```
Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
1               5                   10              15
Cys Gly Lys Ser Phe Ser Asp Pro Gly His Leu Val Arg His Gln Arg
            20              25              30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
        35                  40              45
Phe Ser Thr Ser Gly Ser Leu Val Arg His Gln Arg Thr His Thr Gly
    50              55                  60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65              70                  75                      80
Ser Ser Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
            85              90                  95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu Val
            100             105             110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
        115             120             125
Cys Gly Lys Ser Phe Ser Asp Ser Arg Asp Leu Ala Arg His Gln Arg
    130             135             140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145             150             155                     160
Phe Ser Gln Ser Ser His Leu Val Arg His Gln Arg Thr His Thr Gly
            165             170                 175
Lys Lys Thr Ser Gly Gln Ala Gly
            180
```

<210> 41
<211> 184
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFPm4

<400> 41

```
Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
1               5                   10              15
Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu Val Arg His Gln Arg
            20              25              30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
        35                  40              45
Phe Ser Gln Ser Ser Ser Leu Val Arg His Gln Arg Thr His Thr Gly
    50              55                  60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Asp Cys
65              70                  75                      80
Arg Asp Leu Ala Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
            85              90                  95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu Val
            100             105             110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
        115             120             125
Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg
    130             135             140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145             150             155                     160
Phe Ser Thr Ser Gly His Leu Val Arg His Gln Arg Thr His Thr Gly
            165             170                 175
Lys Lys Thr Ser Gly Gln Ala Gly
            180
```

<210> 42
<211> 184
<212> PRT

15

<213> Artificial Sequence

<220>
<223> ZFPAp3

<400> 42
```
Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
 1               5                  10                  15
Cys Gly Lys Ser Phe Ser Gln Ser Ser Ser Leu Val Arg His Gln Arg
            20                  25                  30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
        35                  40                  45
Phe Ser Gln Ser Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly
        50                  55                  60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65                  70                  75                  80
Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
                85                  90                  95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Thr Ser Gly Ser Leu Val
            100                 105                 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
        115                 120                 125
Cys Gly Lys Ser Phe Ser Gln Ser Ser His Leu Val Arg His Gln Arg
        130                 135                 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145                 150                 155                 160
Phe Ser Thr Ser Gly Asn Leu Val Arg His Gln Arg Thr His Thr Gly
                165                 170                 175
Lys Lys Thr Ser Gly Gln Ala Gly
                180
```

<210> 43
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Promoter 18bp 2C7

<400> 43
```
gcgtgggcgg cgtgggcg                                                  18
```

<210> 44
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 44
```
Ser Gln Ser Ser Asn Leu Val
 1               5
```

<210> 45
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 45
```
Ser Asp Pro Gly Asn Leu Val
```

16

<210> 46
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 46
Ser Arg Ser Asp Asn Leu Val Arg
 1   5

<210> 47
<211> 7
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 47
Ser Thr Ser Gly Asn Leu Val
 1   5

<210> 48
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 48
Ser Gln Ser Gly Asp Leu Arg Arg
 1   5

<210> 49
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 49
Ser Asp Cys Arg Asp Leu Ala Arg
 1   5

<210> 50
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 50
Ser Arg Ser Asp Asp Leu Val Arg
 1   5

<210> 51
<211> 7

17

```
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 51
Ser Thr Ser Gly Glu Leu Val
 1               5

<210> 52
<211> 8
<212> PRT
<213> Artificial sequence

<220>
<223> ZFP domain

<400> 52
Ser Gln Ser Ser His Leu Val Arg
 1               5

<210> 53
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 53
Ser Gln Arg Ala His Leu Glu Arg
 1               5

<210> 54
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 54
Ser Asp Pro Gly His Leu Val Arg
 1               5

<210> 55
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 55
Ser Arg Ser Asp Lys Leu Val Arg
 1               5

<210> 56
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
```

<223> ZFP domain

<400> 56
Ser Thr Ser Gly His Leu Val Arg
 1   5

<210> 57
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 57
Ser Gln Ser Ser Ser Leu Val Arg
 1   5

<210> 58
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 58
Ser Asp Pro Gly Ala Leu Val Arg
 1   5

<210> 59
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 59
Ser Arg Ser Asp Val Leu Val Arg
 1   5

<210> 60
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 60
Ser Arg Lys Asp Ser Leu Val Arg
 1   5

<210> 61
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 61
Ser Thr Ser Gly Ser Leu Val Arg

19

<210> 62
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> ZFP domain

<400> 62
Ser Gln Ala Gly His Leu Ala Ser
 1   5

<210> 63
<211> 330
<212> DNA
<213> Artificial sequence

<220>
<223> ZFPm2a

<400> 63
gaggaggagg aggtggccca ggcggccctc gagcccgggg agaagcccta tgcttgtccg   60
gaatgtggta agtccttcag ccgcagcgat aacctggtgc gccaccagcg tacccacacg   120
ggtgaaaaac cgtataaatg cccagagtgc ggcaaatctt ttagccaggc cggccacctg   180
gccagccatc aacgcactca tactggcgag aagccataca aatgtccaga atgtggcaag   240
tctttctctc ggtctgacaa tctcgtccgg caccaacgta ctcacaccgg taaaaaaact   300
agtggccagg ccggccagct cctcctcctc   330

<210> 64
<211> 330
<212> DNA
<213> Artificial sequence

<220>
<223> ZFP2b

<400> 64
gaggaggagg aggtggccca ggcggccctc gagcccgggg agaagcccta tgcttgtccg   60
gaatgtggta agtccttctc tcagagctct cacctggtgc gccaccagcg tacccacacg   120
ggtgaaaaac cgtataaatg cccagagtgc ggcaaatctt ttagccagtc cagcaacctg   180
gtgcgccatc aacgcactca tactggcgag aagccataca aatgtccaga atgtggcaag   240
tctttctctc ggtctgacaa tctcgtccgg caccaacgta ctcacaccgg taaaaaaact   300
agtggccagg ccggccagct cctcctcctc   330

<210> 65
<211> 18
<212> DNA
<213> Artificial sequence

<220>
<223> Oligonucleotide

<400> 65
gagtgagagg aggaagga   18

<210> 66
<211> 5731
<212> DNA
<213> Artificial sequence

<220>
<223> 2C7-SID

<400> 66

```
gacggatcgg gagatctccc gatcccctat ggtcgactct cagtacaatc tgctctgatg        60
ccgcatagtt aagccagtat ctgctccctg cttgtgtgtt ggaggtcgct gagtagtgcg       120
cgagcaaaat ttaagctaca acaaggcaag gcttgaccga caattgcatg aagaatctgc       180
ttagggttag gcgttttgcg ctgcttcgcg atgtacgggc cagatatacg cgttgacatt       240
gattattgac tagttattaa tagtaatcaa ttacggggtc attagttcat agcccatata       300
tggagttccg cgttacataa cttacggtaa atggcccgcc tggctgaccg cccaacgacc       360
cccgcccatt gacgtcaata atgacgtatg ttcccatagt aacgccaata gggactttcc       420
attgacgtca atgggtggac tatttacggt aaactgccca cttggcagta catcaagtgt       480
atcatatgcc aagtacgccc cctattgacg tcaatgacgg taaatggccc gcctggcatt       540
atgcccagta catgacctta tgggactttc ctacttggca gtacatctac gtattagtca       600
tcgctattac catggtgatg cggttttggc agtacatcaa tgggcgtgga tagcggtttg       660
actcacgggg atttccaagt ctccacccca ttgacgtcaa tgggagtttg ttttggcacc       720
aaaatcaacg ggactttcca aaatgtcgta acaactccgc cccattgacg caaatgggcg       780
gtaggcgtgt acggtgggag gtctatataa gcagagctct ctggctaact agagaaccca       840
ctgcttactg gcttatcgaa attaatacga ctcactatag ggagacccaa gctggctagc       900
atggccgctg ccgtgcgcat gaacatccag atgctgctcg aagccgctga ttatctggaa       960
cgccgggagc gcgaagccga gcacggctac gccagcatgc tgccatatcc gaaaaagaaa      1020
cgcaaggtgg cccaggcggc cctcgagccc tatgcttgcc ctgtcgagtc ctgcgatcgc      1080
cgcttttcta agtcggctga tctgaagcgc catatccgca tccacacagg ccagaagccc      1140
ttccagtgtc gaatatgcat gcgtaacttc agtcgtagtg accaccttac cacccacatc      1200
cgcacccaca caggcgagaa gccttttgcc tgtgacattt gtgggaggaa gtttgccagg      1260
agtgatgaac gcaagaggca taccaaaatc cataccggtg agaagcccta tgcttgccct      1320
gtcgagtcct gcgatcgccg cttttctaag tcggctgatc tgaagcgcca tatccgcatc      1380
cacacaggcc agaagccctt ccagtgtcga atatgcatgc gtaacttcag tcgtagtgac      1440
caccttacca cccacatccg cacccacaca ggcgagaagc cttttgcctg tgacatttgt      1500
gggaggaagt ttgccaggag tgatgaacgc aagaggcata ccaaaatcca tttaagacag      1560
aaggactcta gaactagtgg ccaggccggc cagtacccgt acgacgttcc ggactacgct      1620
tcttgaaagc ttggtaccga gctcggatcc actagtccag tgtggtggaa ttctgcagat      1680
atccagcaca gtggcggccg ctcgagtcta gagggcccgt ttaaacccgc tgatcagcct      1740
cgactgtgcc ttctagttgc cagccatctg ttgtttgccc ctccccgtg ccttccttga      1800
ccctggaagg tgccactccc actgtccttt cctaataaaa tgaggaaatt gcatcgcatt      1860
gtctgagtag gtgtcattct attctggggg gtggggtggg gcaggacagc aagggggagg      1920
attgggaaga caatagcagg catgctgggg atgcggtggg ctctatggct tctgaggcgg      1980
aaagaaccag ctggggctct aggggggtatc cccacgcgcc ctgtagcggc gcattaagcg      2040
cggcgggtgt ggtggttacg cgcagcgtga ccgctacact gccagcgcc ctagcgcccg      2100
ctcctttcgc tttcttccct tcctttctcg ccacgttcgc cggctttccc cgtcaagctc      2160
taaatcgggg catccctta gggttccgat ttagtgcttt acggcacctc gaccccaaaa      2220
aacttgatta gggtgatggt tcacgtagtg ggccatcgcc ctgatagacg gtttttcgcc      2280
ctttgacgtt ggagtccacg ttctttaata gtggactctt gttccaaact ggaacaacac      2340
tcaaccctat ctcggtctat tcttttgatt tataagggat tttgggatt tcggcctatt      2400
ggttaaaaaa tgagctgatt taacaaaaat ttaacgcgaa ttaattctgt ggaatgtgtg      2460
tcagttaggg tgtggaaagt ccccaggctc cccaggcagg cagaagtatg caaagcatgc      2520
atctcaatta gtcagcaacc aggtgtggaa agtccccagg ctccccagca ggcagaagta      2580
tgcaaagcat gcatctcaat tagtcagcaa ccatagtccc gcccctaact ccgcccatcc      2640
cgcccctaac tccgcccagt tccgcccatt ctccgcccca tggctgacta attttttta      2700
tttatgcaga ggccgaggcc gcctctgcct ctgagctatt ccagaagtag tgaggaggct      2760
tttttggagg cctaggcttt tgcaaaaagc tcccgggagc ttgtatatcc attttcggat      2820
ctgatcagca cgtgttgaca attaatcatc ggcatagtat atcggcatag tataatacga      2880
caaggtgagg aactaaacca tggccaagtt gaccagtgcc gttccggtgc tcaccgcgcg      2940
cgacgtcgcc ggagcggtcg agttctggac cgaccggctc gggttctccc gggacttcgt      3000
ggaggacgac ttcgccggtg tggtccggga cgacgtgacc ctgttcatca gcgcggtcca      3060
ggaccaggtg gtgccggaca acaccctggc ctgggtgtgg gtgcgcggcc tggacgagct      3120
gtacgccgag tggtcggagg tcgtgtccac gaacttccgg gacgcctccg gccggccat      3180
gaccgagatc ggcgagcagc cgtgggggcg ggagttcgcc ctgcgcgacc cggccggcaa      3240
ctgcgtgcac ttcgtggccg aggagcagga ctgacacgtg ctacgagatt tcgattccac      3300
cgccgccttc tatgaaaggt tgggcttcgg aatcgttttc cgggacgccg ctggatgat      3360
cctccagcgc ggggatctca tgctggagtt cttcgcccac cccaacttgt ttattgcagc      3420
ttataatggt tacaaataaa gcaatagcat cacaaatttc acaaataaag cattttttc      3480
actgcattct agttgtggtt tgtccaaact catcaatgta tcttatcatg tctgtatacc      3540
gtcgacctct agctagagct tggcgtaatc atggtcatag ctgtttcctg tgtgaaattg      3600
ttatccgctc acaattccac acaacatacg agccggaagc ataaagtgta aagcctgggg      3660
tgcctaatga gtgagctaac tcacattaat tgcgttgcgc tcactgcccg ctttccagtc      3720
```

21

```
gggaaacctg  tcgtgccagc  tgcattaatg  aatcggccaa  cgcgcgggga  gaggcggttt      3780
gcgtattggg  cgctcttccg  cttcctcgct  cactgactcg  ctgcgctcgg  tcgttcggct      3840
gcggcgagcg  gtatcagctc  actcaaaggc  ggtaatacgg  ttatccacag  aatcaggggga     3900
taacgcagga  aagaacatgt  gagcaaaagg  ccagcaaaag  gccaggaacc  gtaaaaaggc      3960
cgcgttgctg  gcgtttttcc  ataggctccg  cccccctgac  gagcatcaca  aaaatcgacg      4020
ctcaagtcag  aggtggcgaa  acccgacagg  actataaaga  taccaggcgt  ttccccctgg      4080
aagctccctc  gtgcgctctc  ctgttccgac  cctgccgctt  accggatacc  tgtccgcctt      4140
tctcccttcg  ggaagcgtgg  cgctttctca  atgctcacgc  tgtaggtatc  tcagttcggt      4200
gtaggtcgtt  cgctccaagc  tgggctgtgt  gcacgaaccc  cccgttcagc  ccgaccgctg      4260
cgccttatcc  ggtaactatc  gtcttgagtc  caacccggta  agacacgact  tatcgccact      4320
ggcagcagcc  actggtaaca  ggattagcag  agcgaggtat  gtaggcggtg  ctacagagtt      4380
cttgaagtgg  tggcctaact  acggctacac  tagaaggaca  gtatttggta  tctgcgctct      4440
gctgaagcca  gttaccttcg  gaaaaagagt  tggtagctct  tgatccggca  aacaaaccac      4500
cgctggtagc  ggtggttttt  ttgtttgcaa  gcagcagatt  acgcgcagaa  aaaaaggatc      4560
tcaagaagat  cctttgatct  tttctacggg  gtctgacgct  cagtggaacg  aaaactcacg      4620
ttaagggatt  ttggtcatga  gattatcaaa  aaggatcttc  acctagatcc  ttttaaatta      4680
aaaatgaagt  tttaaatcaa  tctaaagtat  atatgagtaa  acttggtctg  acagttacca      4740
atgcttaatc  agtgaggcac  ctatctcagc  gatctgtcta  tttcgttcat  ccatagttgc      4800
ctgactcccc  gtcgtgtaga  taactacgat  acgggagggc  ttaccatctg  gccccagtgc      4860
tgcaatgata  ccgcgagacc  cacgctcacc  ggctccagat  ttatcagcaa  taaaccagcc      4920
agccggaagg  gccgagcgca  gaagtggtcc  tgcaacttta  tccgcctcca  tccagtctat      4980
taattgttgc  cgggaagcta  gagtaagtag  ttcgccagtt  aatagtttgc  gcaacgttgt      5040
tgccattgct  acaggcatcg  tggtgtcacg  ctcgtcgttt  ggtatggctt  cattcagctc      5100
cggttcccaa  cgatcaaggc  gagttacatg  atcccccatg  ttgtgcaaaa  aagcggttag      5160
ctccttcggt  cctccgatcg  ttgtcagaag  taagttggcc  gcagtgttat  cactcatggt      5220
tatggcagca  ctgcataatt  ctcttactgt  catgccatcc  gtaagatgct  tttctgtgac      5280
tggtgagtac  tcaaccaagt  cattctgaga  atagtgtatg  cggcgaccga  gttgctcttg      5340
cccggcgtca  atacgggata  ataccgcgcc  acatagcaga  actttaaaag  tgctcatcat      5400
tggaaaacgt  tcttcggggc  gaaaactctc  aaggatctta  ccgctgttga  gatccagttc      5460
gatgtaaccc  actcgtgcac  ccaactgatc  ttcagcatct  tttactttca  ccagcgtttc      5520
tgggtgagca  aaaacaggaa  ggcaaaatgc  cgcaaaaaag  ggaataaggg  cgacacggaa      5580
atgttgaata  ctcatactct  tcctttttca  atattattga  agcatttatc  agggttattg      5640
tctcatgagc  ggatacatat  ttgaatgtat  ttagaaaaat  aaacaaatag  gggttccgcg      5700
cacatttccc  cgaaaagtgc  cacctgacgt  c                                       5731
```

<210> 67
<211> 81
<212> DNA
<213> Artificial sequence

<220>
<223> Primer F1-f1

<400> 67
```
ggtaagtcct  tcagccgcag  cgataacctg  gtgcgccacc  agcgtaccca  cacgggtgaa      60
aaaccgtata  aatgcccaga  g                                                   81
```

<210> 68
<211> 87
<212> DNA
<213> Artificial sequence

<220>
<223> Primer F1-f2

<400> 68
```
gaggaggagg  aggtggccca  ggcggccctc  gagcccgggg  agaagcccta  tgcttgtccg      60
gaatgtggta  agtccttcag  ccgcagc                                             87
```

<210> 69
<211> 74
<212> DNA

22

<213> Artificial sequence

<220>
<223> Primer F2-f

<400> 69
gccaggccgg ccacctggcc agccatcaac gcactcatac tggcgagaag ccatacaaat   60
gtccagaatg tggc   74

<210> 70
<211> 66
<212> DNA
<213> Artificial sequence

<220>
<223> Primer F2-b

<400> 70
gctggccagg tggccggcct ggctaaaaga tttgccgcac tctgggcatt tatacggttt   60
ttcacc   66

<210> 71
<211> 58
<212> DNA
<213> Artificial sequence

<220>
<223> Primer F3-b1

<400> 71
ccggacgaga ttgtcagacc gagagaaaga cttgccacat tctggacatt tgtatggc   58

<210> 72
<211> 81
<212> DNA
<213> Artificial sequence

<220>
<223> Primer F3-b2

<400> 72
gaggaggagg agctggccgg cctggccact agttttttta ccggtgtgag tacgttggtg   60
ccggacgaga ttgtcagacc g   81

<210> 73
<211> 315
<212> DNA
<213> Artificial sequence

<220>
<223> 3 finger protein C7

<400> 73
atggcccagg cggccctcga gccctatgct tgccctgtcg agtcctgcga tcgccgcttt   60
tctaagtcgg ctgatctgaa gcgccatatc cgcatccaca caggccagaa gcccttccag   120
tgtcgaatat gcatgcgtaa cttcagtcgt agtgaccacc ttaccaccca catccgcacc   180
cacacaggcg agaagccttt tgcctgtgac atttgtggga ggaagtttgc caggagtgat   240
gaacgcaaga ggcataccaa aatccattta agacagaagg actctagaac tagtggccag   300
gccggccagg ctagc   315

<210> 74
<211> 105
<212> PRT
<213> Artificial sequence

<220>
<223> Amino acid sequence of 3 finger protein C7

<400> 74
```
Met Ala Gln Ala Ala Leu Glu Pro Tyr Ala Cys Pro Val Glu Ser Cys
 1               5                  10                  15
Asp Arg Arg Phe Ser Lys Ser Ala Asp Leu Lys Arg His Ile Arg Ile
            20                  25                  30
His Thr Gly Gln Lys Pro Phe Gln Cys Arg Ile Cys Met Arg Asn Phe
            35                  40                  45
Ser Arg Ser Asp His Leu Thr Thr His Ile Arg Thr His Thr Gly Glu
    50                  55                  60
Lys Pro Phe Ala Cys Asp Ile Cys Gly Arg Lys Phe Ala Arg Ser Asp
65                  70                  75                  80
Glu Arg Lys Arg His Thr Lys Ile His Leu Arg Gln Lys Asp Ser Arg
            85                  90                  95
Thr Ser Gly Gln Ala Gly Gln Ala Ser
            100                 105
```

<210> 75
<211> 184
<212> PRT
<213> Artificial sequence

<220>
<223> Zinc finger protein ZFPm1

<400> 75
```
Ala Gln Ala Ala Leu Glu Pro Gly Glu Lys Pro Tyr Ala Cys Pro Glu
 1               5                  10                  15
Cys Gly Lys Ser Phe Ser Asp Pro Gly His Leu Val Arg His Gln Arg
            20                  25                  30
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
            35                  40                  45
Phe Ser Gln Arg Ala His Leu Glu Arg His Gln Arg Thr His Thr Gly
    50                  55                  60
Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser Phe Ser Gln Ser
65                  70                  75                  80
Ser Asn Leu Val Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr
            85                  90                  95
Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val
            100                 105                 110
Arg His Gln Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu
            115                 120                 125
Cys Gly Lys Ser Phe Ser Arg Ser Asp Asn Leu Val Arg His Gln Arg
    130                 135                 140
Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys Ser
145                 150                 155                 160
Phe Ser Gln Ala Gly His Leu Ala Ser His Gln Arg Thr His Thr Gly
            165                 170                 175
Lys Lys Thr Ser Gly Gln Ala Gly
            180
```

<210> 76
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Zinc finger protein ZFPm1 and ZFPm2 binding site m12

<400> 76
gcctccttcc tcctctcact c   21

24

```
<210> 77
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Zinc finger protein ZFPm3 and ZFPm4 binding site m34

<400> 77
gccaactact acggctccct cacc                                              24

<210> 78
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Zinc finger peptide linker

<400> 78
Thr Gly Glu Lys Pro
 1               5

<210> 79
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> DNA binding motif

<400> 79
Gln Ala Leu Gly Gly His
 1               5
```